RIVER DES PERES PLAN

CITY PLAN COMMISSION

SAINT LOUIS, MISSOURI

1918

RIVER DES PERES PLAN.

Concerning Largely the Industrial and Residential Expansion and Economic Welfare of St. Louis.

Prepared by

THE CITY PLAN COMMISSION

in conjunction with

The Department of Public Utilities

The Department of the President—
Division of Design

The Department of Public Welfare—
Division of Parks

The Department of Streets and Sewers

BOARD OF PUBLIC SERVICE.

St. Louis, Mo.
A. R. Fleming Printing Co.
1916

OFFICE OF THE CITY PLAN COMMISSION

October Sixth,
Nineteen Sixteen.

To the Honorable
Board of Public Service,
City of St. Louis, Mo.

Gentlemen:—

The danger from flood and pollution in the River des Peres Valley has caused, from time to time, a demand for relief from intolerable conditions. In addition to a proposed sewer and channel for this valley it has been suggested that a railroad be built to complete the belt line about the city, and also that a driveway be built through the unusually attractive scenic area.

Realizing that these and other local matters should be given simultaneous consideration, and realizing further that the mere elimination of flood and pollution troubles would not alone give to a vast idle but important section of the city the impetus to the early residential and industrial development which should come here, the City Plan Commission has caused to be prepared this River des Peres Plan as a basis for any contemplated action.

Included in the plan is a sewer and channel designed by the Division of Design, Department of the President, Board of Public Service; a railroad designed by the Department of Public Utilities, Board of Public Service; a driveway; a complete major street plan; and provision for the establishment of an industrial area of approximately 950 acres. The urgency for relief from present conditions in the River des Peres Valley has prompted the preparation of this report previous to a Comprehensive Plan for the city at large. With respect to the section under consideration, however, the plan is believed to be comprehensive and will be in absolute conformity to all city expansion.

While the detail of the plan has been carefully prepared, it is respectfully submitted to your Honorable Board for con-

sideration and such wise modification as may result from public hearings or other expression of public opinion.

The City Plan Commission indorses this plan as an unusual opportunity for the advancement of the best interests of St. Louis, the future benefit from which will be inestimable.

Respectfully submitted,

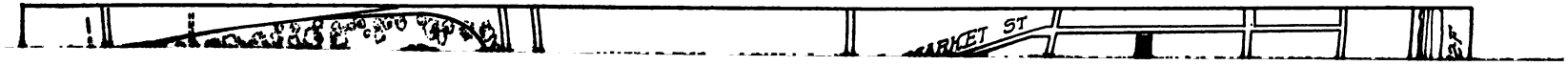
JAMES C. JONES, *Chairman;*
DWIGHT F. DAVIS, *Vice Chairman;*
DR. B. W. CLARKE,
CHAS. H. DIEL,
DR. W. H. FUCHS,
CLARENCE H. HOWARD,
LOUIS LABEAUME,
PROF. A. S. LANGSDORF,
GEORGE J. TANSEY,
Members of the City Plan Commission.

E. R. KINSEY,
President Board of Public Service.
NATHAN H. HALL,
President Board of Aldermen.
CHAS. M. TALBERT,
Director of Streets and Sewers.
JAMES N. MCKELVEY,
Building Commissioner.
NELSON CUNLIFF,
Commissioner Parks and Recreation.
Members Ex-Officio.

WALTER B. STEVENS,
Secretary.
HARLAND BARTHOLOMEW,
Engineer.

TABLE OF CONTENTS.

LIST OF ILLUSTRATIONS.


MARKET ST

THE PROBLEM.

Social and economic forces are of tremendous influence in determining the character and extent of a city's growth. Where development runs counter to economic laws, reaction will set in. One of the controlling economic forces in the growth of cities is uniformity of development. Where buildings are scattered over a considerable area it becomes impossible to supply adequate service in respect to transit, water, gas, streets, sewers and other utilities. These can be had only where the land is intensively used and a return sufficient to pay for them is produced.

St. Louis has experienced, like all other cities, a certain haphazard growth. This indiscriminate expansion has produced uneconomic conditions which today are being realized in an apparent or threatened decline in the rate of increase of the city's population and industry. It cannot be said that reaction has set in, yet it is a well-known fact that rapid growth of population and industry is taking place in neighboring cities across the Mississippi River and in St. Louis County, all of which are within the metropolitan district.

Location for these increasing metropolitan activities are selected outside instead of within the city, because St. Louis cannot at present offer such cheap, attractive and available residential and industrial sites. If St. Louis is to benefit from the increases for which it is primarily responsible, and grow as other large cities are growing, it must take immediate steps to place on the market the advantageous areas within its bounds and to make these areas so attractive to prospective industries and residents that they will not consider going elsewhere. To recite what other cities, large and small, are spending for railroad, waterfront, terminal, industrial and residential improvement, is unnecessary. St. Louisans are only too familiar with what New York, Chicago, Boston, Philadelphia, Cleveland, New Orleans and innumerable others are doing.

Failure to provide adequately for the industrial and residential expansion of St. Louis can be attributed not so much to a lack of public interest and appreciation of conditions, but to a lack of assurance as to just what form the necessary endeavor should assume and a realization that the power of cities to control their growth is limited. A bridge across the Mississippi is nearing completion, built with $6,000,000 of public money. This is a most important step forward in promoting industrial expansion and unification. Other steps must follow if a complete solution of the city's needs is to be realized. In the following "River des Peres Plan" is presented a complete plan, *for gradual accomplishment*, a plan which will open to residential and industrial development a vast unused area, with the result that St. Louis can offer inducements unexcelled. From the development which must follow will come inestimable economic return to the city, with an opportunity to sustain its position in the list of great progressive American cities.

To the casual observer the River des Peres is a small stream coursing through the western and southern extremities of the city, into which flows certain sewage that causes occasional offensive odors, particularly in Forest Park, and which in times of heavy rainfall overflows quite extensively, causing great damage to property. Except when the odors from sewage or the danger of flood occurs, little attention is given to this stream, though it is generally considered to be a nuisance of which the community would be pleased to rid itself; however, the difficulty and expense involved are so great that definite concerted action has not been taken.

In 1914 the City Plan Commission published the following facts about the River des Peres:

Length, approximately 16 miles within the city limits.

Watershed, 67,000 acres, only 15,000 of which are within the city limits, while 52,000 are in St. Louis County.

St. Louis has constructed about 6 miles of foul water sewer along lower reaches of the stream.

St. Louis has constructed about 3 miles of foul water sewer beginning at the point where the stream enters the city near Delmar Avenue.

6,000 acres of farm land in River des Peres watershed in St. Louis County converted into lots from 1900 to 1910.

Transition from farm land to residential property since 1910 much more rapid.

As a result of its investigation the City Plan Commission submitted in 1914 a proposed law providing for the establishment of a sanitary district for the River des Peres watershed. The appointment of a Commission for such a district was made contingent upon concurrent action of the voters of St. Louis County and St. Louis City. An ordinance authorizing the submission of the plan to the voters was passed in the City of St. Louis, but the Judges of the County Court failed to take similar action, thus deferring further procedure.

No subsequent action has been taken or is at present under way. Meanwhile additional floods have come, several lives have been lost, and damage suits to the extent of several hundred thousand dollars have been filed against the city.

Several Considerations.

But the problem of drainage is not the only consideration, though its handling will be most important and quite expensive. The very existence of the River des Peres in its present state is partly responsible for the uneconomic development of St. Louis. Because of floods it has rendered useless, extensive tracts of land which should long ago have been converted to industrial use. Because of offensive odors it has rendered unfit for residence purposes much excellent adjacent territory. To satisfactorily dispose of the storm water and sewage problems of the River des Peres is the first step in the development of the River des Peres Valley and the development of the River des Peres Valley would immediately create additional and sorely needed room for the industrial and residential expansion of St. Louis.

Not alone does the present condition of the River des Peres preclude the use of much valuable land, but because of increased floods, due to a greater run off of storm water from land now being subdivided into small lots for residential use, much property

previously unaffected is being greatly damaged. As a result, some industries in this district are considering removing their plants from the city.

The improvement of the River des Peres should be demanded because it is a menace to the health of the community, if for no other reason. Its stagnant pools and filthy water are a standing invitation to an epidemic of typhoid.

Unused territory in the southwest section of St. Louis is no further from the city's center than other sections more completely developed. Given proper transit facilities and other incentives to growth, it should become one of St. Louis' busiest centers. Normally it is well within the city's zone of influence.

Full investigation having shown that it is entirely feasible from the engineering standpoint to handle adequately the problems of sewage and storm water run-off, the following steps should be taken as an integral part of the program to open up the vacant territory to its full extent:

Building of a storm water channel and sewer.
Building of an industrial railroad.
Definite determination of the major street plan.
Establishment of residential and industrial districts.
Building of a driveway through natural scenic area.

To do all of these things at one time is not so tremendous an undertaking as might first be supposed. The storm water channel and the sewer will cost many times as much as all of the other undertakings alone, whether considered by itself or in combination with the others. The establishment of residential and industrial districts will cost nothing, the extension of the major streets will be consummated gradually, but should be planned now, the cost of such street construction to be borne partly by the abutters and partly by the city in the customary manner. The railroad would be built alongside the channel on material excavated from the latter, thus effecting a considerable economy in disposition of material. The driveway would be built along the top of the south bluff, making use of land unfitted for industrial or residential use, but well suited for a driveway because of favorable scenic conditions. Its construction in conjunction with

the remainder of the plan would facilitate acquisition of the necessary right-of-way, which would otherwise be unobtainable except at excessive cost.

Unusual Opportunity.

It is doubtful if any city ever had equal opportunity for great accomplishments at so small a cost than has St. Louis in this River des Peres Plan. Natural advantage of the district, need of room for expansion in inexpensive territory, with inestimable benefit to the future, here present an opportunity which makes its cost of small significance. The city needs to be in no "heroic mood," nor should any great amount of civic spirit be necessary to make possible its accomplishment. The plan is an out-and-out business proposition of the first magnitude. The work involves no intricate difficulties, is simple, comparatively inexpensive and in accordance with the most approved modern civic practices.

No greater or more far-reaching undertaking for the commercial and industrial advancement of St. Louis can be conceived.

THE STORM WATER PROBLEM AND THE DISTRIBUTION OF SEWAGE.

The heavy rainfall and resultant flood in the River des Peres Valley on August 20, 1915, demonstrated to the city at large for the first time the menace of an unruly stream. At the request of the Board of Aldermen a statement of the conditions to be met in removing the menace, was prepared and submitted by the Hon. E. R. Kinsey, President of the Board of Public Service, from which has been taken much of the information and many of the figures which here follow.

The River des Peres drains a watershed of 70,000 acres, 16,000 acres of which are within the St. Louis city limits. The main stream runs just within the western and southern city limits, three branches crossing the city limits near Delmar Avenue, near the Frisco Railroad at Lindenwood and near Alabama Avenue, just west of where the stream enters the Mississippi River.

The branch which enters near Delmar Avenue flows through Washington Heights to Forest Park, thence eastwardly very nearly to Kingshighway. Here it turns south, crosses Manchester Avenue and then flows southwest to the city limits at Lindenwood, where it unites with the branch known as the "West Fork."

The West Fork carries a volume of water considerably larger than the branch flowing through Forest Park, so that south of Lindenwood the flow of the stream is more than doubled.

The "Gravois Branch," which enters the city near Alabama Avenue, also has a considerable flow so that the stream assumes a very considerable proportion at this point.

The River des Peres thus serves to carry off storm water and also acts as a general drain for all sewage in its watershed.

Present Conditions—Storm Water.

Extensive building and street paving in the River des Peres watershed has caused a greatly increased run-off of storm water during any rainfall, so that the channel of the stream is far from sufficient to carry away at once the volume of water which flows into it. Constantly increasing floods have resulted, causing serious interference and interruption to business and greatly damaging property.

With increasing building activities the volume of water will become greater even with normal rainfall. The most serious floods have occurred during periods of heavy rainfall. In March, 1897; in October, 1905; in June and July, 1912; in August, 1915; and in August, 1916, there have been floods which caused much damage.

It would be possible to carry all the water in the West Branch, from Delmar Avenue through Forest Park to Lindenwood, in a large enclosed sewer, thus eliminating the stream entirely between these two points. A sewer to carry such a volume of water would necessarily be quite large, however, and quite expensive. The flow could as well be taken care of in an open channel with considerable less expense. While an open channel for storm water would be undesirable in Forest Park, it would not be objectionable south of Manchester Avenue, so that approximately one-half the length of the West Branch from Delmar Avenue to Lindenwood could profitably be converted into a sewer, the remainder into a straight, open channel with a small sanitary sewer below it.

Between Lindenwood and the outlet at the Mississippi River the volume of water is so great that a straight, open channel of considerable size would be needed to carry off all the water. The irregularity of the present channel and the immense amount of water to be carried off at each rainfall has caused large floods in the extreme southern and southwestern reaches of the stream, a condition which would entirely be removed by the construction of a straight, open channel. Where a channel was constructed it would be necessary to use concrete to prevent erosion of the

banks, except where substantial rock be encountered. It would also be necessary to remove the flow of sewage through the channel so that the latter might always be dry and clean in clear weather.

Sewage should be carried in a sewer built below the storm water channel. Such a sewer has already been built in the River des Peres Valley from Lindenwood to the Mississippi.

Present Conditions—Sewage.

The West Branch of the River des Peres entering the city near Delmar Avenue is badly polluted from the sewage discharged into it by towns in St. Louis County. The sewers from all that portion of St. Louis between Taylor Avenue, the City Limits, Forest Park and Garfield Avenue now empty directly into the River des Peres from Forest Park to Lindenwood. When these sewers were first built it was considered unwise to discharge sewage directly into the River des Peres and an intercepting sewer, known as the Pine street sewer, was built which tapped each of these sewers just above the outlet into the River des Peres. The sewage flowed through the Pine street sewer to the Mill Creek System, but in times of storm the discharge was carried directly into the River des Peres.

When the Washington Heights section was developed it was found impossible to divert the dry weather flow from its sewers into the Mill Creek System, so a small sewer was built along the bottom of the River des Peres which carried not only the sewage of the Washington Heights section, but the whole flow of the stream at the city limits to Union Avenue in Forest Park where, by means of pumps, it was lifted into the Pine Street sewer above described.

The growth of this part of the city has been so great, however, that the increased flow of sewage greatly overtaxes the intercepting sewer so that even a small rainfall or even street sprinkling occasionally causes a considerable amount of sewage to overflow into the river channel.

This is a most serious condition, but even more so is that section of the stream along Manchester Avenue where it is in

reality an open sewer, receiving both sewage and storm water from the Italian Hill District, Sulphur Avenue section, Clifton Heights, Tamm Avenue, the Benton District, Ellendale, Greenwood and Gratiot. The topographical conditions are such that the main line intercepting sewer for all these districts must go through the River des Peres Valley and no money has been available with which to build it.

From Lindenwood to the Mississippi a sewer was built in 1911-12 at a cost of $930,000, which carries all the sewage of the lower valley, but the pollution which enters the stream above Lindenwood so contaminates the water that it is badly polluted for the remainder of the distance, while the extremely irregular course of the stream causes standing pools and stagnant water which are a constant menace to the health of the community. To construct a straight, open channel in connection with the sanitary sewer beneath, will relieve the southern part of the city of flood and health menace, a relief greatly to be desired.

Proposed Sewer System.

Plans for a complete storm water and sewage system have been prepared by the Division of Design, Department of the President, Board of Public Service, as follows:

From the Mississippi River to the several forks of the River des Peres in Maplewood, there will be an open channel 160 to 180 feet in width and 18 feet deep, built of reinforced concrete. This channel will follow approximately the line of the foul water sewer already there. The foul water sewer is of sufficient size to dispose of the dry weather flow. The channel will be of adequate width and depth to carry off the floods caused by excessive rainfall. From Macklind Avenue to the forks in Maplewood there will be a channel about 80 feet wide and 16 feet deep. Beneath this will be constructed a foul water sewer to carry dry weather flow, the sewage and storm water both now being carried off in the present open channel of the River des Peres. From Macklind Avenue to the Mississippi River the open channel will be of sufficient grade and easy curvature to permit direct flow and thus

eliminate all stagnant water now caused by the extremely irregular course of the present stream. While the open channel will be dry and clean, except at times of heavy rainfall, it can be covered over at some subsequent date without unusual added expense, if necessary. From Macklind Avenue to Union Avenue in Forest Park there would be a double section reinforced concrete sewer, each section being from 27 to 30 feet wide by about 22 feet high. From Union Avenue to the City Limits in Hodiamont there would be a single section reinforced concrete sewer about 30 feet wide by 23 feet high. These sewers would carry off such extensive rains as the two in 1912 and the long rain in August, 1915.

In addition to the main line construction above mentioned, it will be necessary to reconstruct, connect or extend certain subsidiary sewers which now enter the intercepting sewer in Forest Park. There are approximately thirty of these extensions and connections to be made.

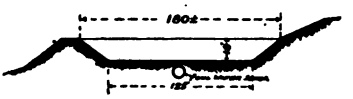
There will also be required in connection with the construction of the new channel, certain changes in the bridges crossing the River des Peres.

The total estimated cost for the relief of sewage and storm water troubles in the River des Peres Valley, including open channel from Mississippi River to Macklind Avenue, closed sewer from Macklind Avenue through Forest Park to the city limits, foul water sewer from Maplewood to Macklind Avenue, reconstruction of bridges, purchase of right-of-way and necessary extensions and connections is $5,815,450.

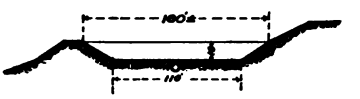
Method of Payment.

It is proposed to pay for the River des Peres sewer and channel entirely by bond issue. It would be the city's largest outlet sewer and therefore a public sewer which should be paid for by the city at large. Furthermore, in the River des Peres Valley only 11% of the cost of all sewers has been paid by the city or $89 out of every $791 per acre of cost.

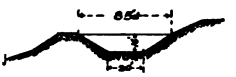
Supposing that the sewer could be built as a joint district sewer, which is practically impossible at this time, the city would



SECTION NO. 1.
MISSISSIPPI RIVER TO GRAVOIS CREEK



SECTION NO. 2
GRAVOIS CREEK TO FRISCO R.R.



SECTION NO. 3
FRISCO R.R. TO KNOX AV

SECTION NO. 4
KNOX AV TO MACKLIND AV

SECTION NO. 5
MACKLIND AV TO UNION BL

SECTION NO. 6.
UNION BL TO CITY LIMITS

SECTIONS OF PROPOSED
RIVER DES PERES CHANNEL & SEWER
AS PREPARED BY
DIVISION OF DESIGN · DEPARTMENT OF THE PRESIDENT
BOARD OF PUBLIC SERVICE

PLAN No. 2.

be obliged to pay about three-fourths of the total cost. To wait until the county would unite in building the sewer would involve great delay, invite additional flood and health menace, to save no more than one-quarter of the total cost.

There is a very general lack of knowledge regarding the method of assessing the cost of sewers. To show the comparative percentage of cost to be paid by the property owners and by the city in the River des Peres, as compared with other major sewer systems, the following table was prepared by the Division of Design, Department of the President, Board of Public Service:

Cost Per Acre of Main Sewer System.
General Comparison.

	Special Tax	City's Share	Total	City's Share
Mill Creek, Old System.....	$ 561	$471	$1,022	46%
Mill Creek, (now)	1,210	471	1,681	28%
Mill Creek Final	1,210	801	2,011	40%
ROCKY BRANCH—				
Original System	314	264	578	46%
Now (including joint district relief)	560	264	824	32%
Proposed Relief	843	406	1,249	33%
Final Relief (including Eastern Sewer)	843	630	1,473	43%
Ferry Street, Now	394	360	754	48%
Ferry Street, including proposed relief	690	394	1,084	36%
Harlem Creek	709	198	907	22%
River des Peres, Now	702	89	791	11%
River des Peres, Proposed ..	702	456	1,158	39%
Old Southern	324	197	521	38%
Old Arsenal	451	262	713	37%
Southern, with Proposed Work	898	484	1,382	35%
Arsenal, with Proposed Work	1,025	549	1,574	35%

It will be seen that the average percentage paid by the city is about 40. In all of the older and consequently smaller sewer systems which drained directly into the Mississippi River, the city paid about 37% of the cost.

The percentage paid by the city for the old Mill Creek system was 46, it is now 28, but will have been increased to 40 when all the necessary extensions and connections have been completed.

The present percentage of cost (11) paid by the city in the River des Peres Valley is by far the lowest and the city's share will just about be normal here as compared with the rest of the city, if the work is paid for through a bond issue.

Attention is called to the fact that the highest cost per acre of sewer service is in the Mill Creek Valley—$2,011. This figure consists of $1,210 paid by special tax, $471 paid by the city with $330 yet to be expended by the city. The city's share will then be 40% or the same per cent. which it has paid, or eventually will pay, in all other sewer systems. Short blocks, shallow lots, greater length of sewer per acre or per block, and the practically impervious nature of the district are responsible for the higher figure.

The Southern-Arsenal District will have paid $1,574 per acre and the Rocky Branch $1,473 when all work is completed. They are among the most closely developed sections in St. Louis.

In the Ferry Street district, which adjoins the Rocky Branch, the cost per acre will be about $1,100, the lower cost being chiefly because of its smaller area and nearness to the Mississippi River.

The Harlem Creek District is less expensive because large sewers were constructed in the initial work about 15 years ago. It is similar to the River des Peres district in many ways, but cheaper because of an outlet on the Mississippi much nearer the center of its drainage area.

STREETS.

Once the offensiveness of stream pollution by sewage and the dangers of flood have been eliminated in the River des Peres Valley, the next step necessary to make accessible the idle territory is the planning of principal streets. These should be properly situated and of sufficient width to accommodate any demands of traffic or transit normally to be expected. Premature opening of any of these streets is not contemplated. The actual alignment and width of the major streets should now be determined and definitely established by ordinance, however, to thus preclude interminable difficulty when actual development occurs. Streets once fixed on the city plan have an infinitely greater chance of correct execution than those which for reasons of economy are constructed with insufficient width or imperfect alignment, due to their establishment following initial land development rather than preceding it.

The greatest development resulting from improvement of conditions in the River des Peres Valley will occur along the lower reaches of the stream near the southern city limits, east from the Frisco R. R. to the Mississippi River. Many major streets are now to be found throughout this area, especially east of Gravois Avenue. With but one or two exceptions, all major streets for the district will be merely extensions of existing streets.

Principal Radials.

Manchester Avenue, Watson Road, Old Manchester Road, Gravois Avenue, Morganford Road, Michigan and Ivory Avenues and Broadway are the present principal radial thoroughfares.

The term "radial" is used to describe these streets since each has a direction leading toward the city's business center and not in alignment with the rectangular street plan so generally fol-

lowed throughout the city. The purpose of these radials is to permit rapid and easy movement of traffic to and from the business center. Since each of the radials will pass through districts used for industry and residence, there is to be expected traffic common to both—motor trucks and heavy horse-drawn vehicles, trolley cars and passenger automobiles. The variety of traffic and necessity for rapid movement will require ample street room. These radials, then, should have widths greater than other streets. Based on the probable future demands of traffic and transit, the present and proposed widths of these principal arteries are:

Street	Present Width	Proposed Minimum Width
Old Manchester Road	60 feet	80 feet
Watson Road	50 feet	80 feet
Wherry Avenue	60 feet	80 feet
Gravois Avenue	60–80 feet	80 feet
Morganford Road	40 feet	80 feet
Michigan Avenue and Ivory Avenue	60 feet	60 feet
Broadway	80 feet	80 feet
Ivanhoe	60 feet	106 feet

Several of these radials already exist in the River des Peres Valley. Where widening is suggested, it could be obtained by the establishment of building lines to which future buildings should conform. Some of the radial streets do not yet exist in the River des Peres Valley, and their extension with the desired width would be most simple. On Plan No. 1 will be seen the present and proposed alignment of these radials. No additional radials are considered necessary.

St. Louis lacks good cross town streets. In the River des Peres Valley at least one good cross town street should be planned before its construction becomes impossible because of excessive cost. Since the greatest industrial development would probably occur immediately north of the industrial railroad, a cross town street, to be most effective, would pass through the center of the industrial district. Such a street would be in effect a counter radial, in that it would intersect most of the other radial streets

at right angles. It should serve as a great distributing highway as well as for through cross town service. There should be great demand for such a street provided it be given adequate width and proper terminating points. It is estimated that a width of 106 feet would be required for such a street, distributed as follows:

2 sidewalks each 16 feet	32 feet
2 roadways each 27 feet	54 feet
2 trolley lines each 10 feet	20 feet
Total	106 feet

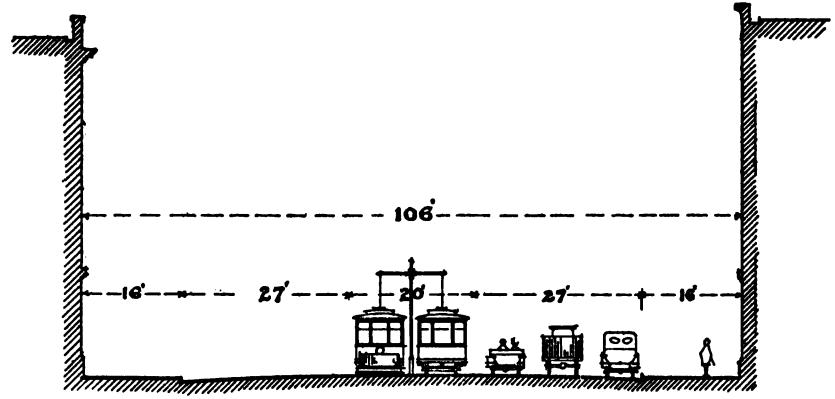
See Plan No. 1 for alignment of this street, and Plan No. 3 for cross section.

The eastern terminus of this street would be at the Alabama Avenue bridge or on Broadway via Davis Street; the western terminus at Old Manchester Road and Ivanhoe Avenue, from where it would connect directly with Manchester Avenue and McCausland Avenue, by means of a viaduct. From the latter point traffic could go east, west or north for indefinite distances. Over this viaduct could come traffic and a trolley line from the northwestern part of the city (such as the Hamilton Line), and continue south and east to the city limits. As a cross town thoroughfare the route would be unsurpassed.

The McCausland Viaduct.

Not only would the proposed viaduct serve as a link in the major street plan, but it would also be of immeasurable benefit to the immediate locality. The Frisco Railroad acts as an insurmountable barrier to communication between the section along Manchester Avenue near McCausland Avenue and the section about Ivanhoe Avenue on the hill east of the Frisco. Old Manchester Road is the only present connecting link between the two districts and its extreme grade makes it a most ineffectual tie.

West of Kingshighway there are no good crossings of the River des Peres Valley. A few dangerous railroad grade crossings occur which are avoided as much as possible. A viaduct as



CROSS SECTION OF PROPOSED MAIN ARTERY
THRO SOUTHERN INDUSTRIAL DISTRICT.

PLAN NO. 3.

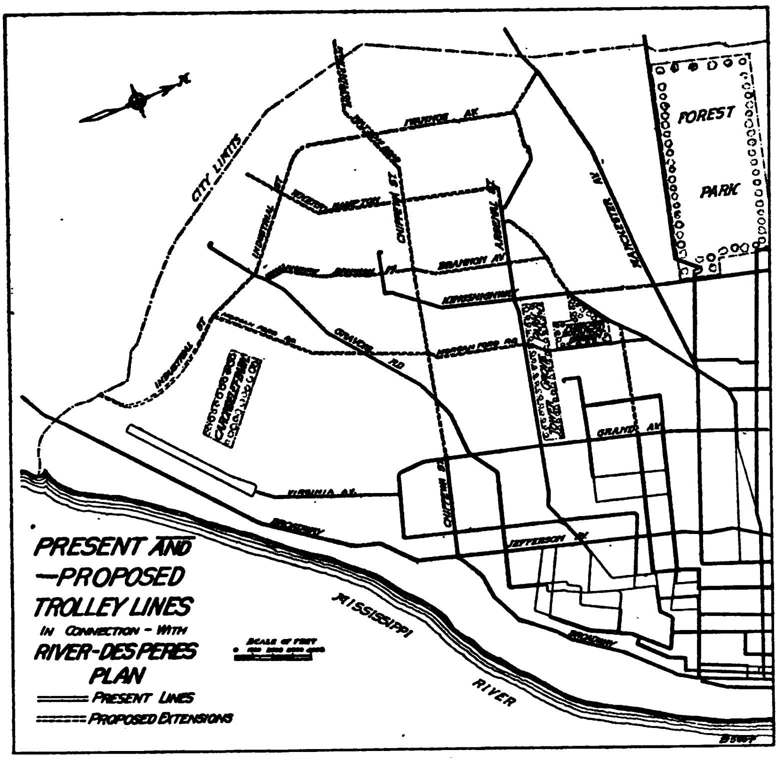
suggested at one of the busiest points would be of tremendous advantage, greater probably than some of the viaducts already built.

For numerous reasons, particularly because of topographical conditions, street plan and economy, it would be unwise to build this viaduct at another point. Its cost is estimated at $437,600. This cost should most properly be paid through a bond issue rather than out of current revenue, as has been customary heretofore. It is questionable as to just how much of the cost could be charged up to the railroads for the elimination of grade crossings. The city's share is estimated at about $400,000.

Principal Rectangular Streets.

Supplementing the large radial streets there should be a system of streets having the same general direction as the great number of small streets, but wider, and at such distance apart as to afford effective means of distribution of traffic throughout the entire area. The streets should be the connecting link between homes or factories and the major radial streets. Their existence is most essential. Already we find the beginnings of such a system in the district in question, but it is far from complete. Certain widenings and extensions are necessary. On Plan No. 1 is shown a complete system, which would not be difficult to obtain. The present and proposed widths of certain streets or extensions comprising this system are as follows:

Street	Present Width	Proposed Minimum Width
Loughborough Avenue	60–70–80 feet	60 feet
Bates Street	60 feet	60 feet
Eichelberger Street	50–60 feet	60 feet
Nottingham Avenue	60 feet	60–80 feet
Chippewa Street	60 feet	80 feet
Fyler Avenue	45–60 feet	80 feet
Arsenal Street	60 feet	80 feet
Hampton Avenue		
Sulphur Avenue		
	60 feet	80 feet
Brannon Avenue	60 feet	80 feet
Morganford Road	40 feet	80 feet


PRESENT AND
PROPOSED
TROLLEY LINES
IN CONNECTION WITH
RIVER-DES PERES
PLAN
PRESENT LINES
PROPOSED EXTENSIONS
CITY LIMITS
FOREST
PARK
MANCHESTER AV.
GRAND AV.
JEFFERSON AV.
VIRGINIA AV.
MISSISSIPPI
RIVER

Plan No. 4.

Streets and Transit.

The failure of the southwestern portion of St. Louis to develop as it should, particularly in sections removed from the River des Peres Valley, is partially due to a lack of transit facilities. To a limited extent transit facilities should precede development. Lack of good transit is all that stands in the way of extensive development in the southwestern part of the city. In planning a major street system, therefore, the probable future transit needs have been considered. On Plan No. 4 is shown a system of proposed transit lines which would effectively serve most of the area in question. Streets where transit lines will come should be wider than those which are given over exclusively to vehicular travel. As a basis for planning the major system of streets, the proposed transit plan was first devised so that on no major street where transit lines should come would there be a minimum width of less than 80 feet. On major streets without transit lines a minimum width of 60 feet is planned.

RAILROADS.

As a part of this "River des Peres Plan," a municipal railroad is proposed from the levee at the mouth of the River des Peres to the Frisco and Terminal Railroad intersection at Maplewood. With the completion of negotiations now pending, the city will come into possession of a railroad system extending along the water front from the Chain of Rocks to Arsenal Street. This could be extended on the top of the levee to the River des Peres. The present proposal is for a further extension through the River des Peres Valley westward to where the Frisco Railroad and the right-of-way of the Terminal Railroad join. While the Terminal Railroad has acquired and graded a right-of-way to the Frisco tracks, it has not yet completed its construction between the Frisco and Missouri Pacific in Maplewood—a distance of something less than one mile. Construction of this is believed to be merely a matter of time and expediency.

A municipal railroad system as outlined would be of great practical advantage to the industrial development of St. Louis, for by means of this system a connection with all railroads entering St. Louis could be effected. A complete railroad belt would be established with connections with the Terminal Railroad in Maplewood and near the river front in the vicinity of the old waterworks. The further practical advantage of this system is predicated upon a direct connection to the tracks of the new Municipal ("Free") Bridge.

The two chief benefits to be derived from such a system as described would be (1) the opening up of large areas, now idle, to good industrial use, and (2) opportunity to direct through freight around the city rather than into the congested Mill Creek Valley, as is now done.

With regard to the railroad in the River des Peres Valley only, with which this report is immediately concerned, its construction at the present time is justified even without immediate complete connections, for at either end it would tie into a much

used railroad, the St. Louis & San Francisco on the west and the Iron Mountain on the east. As the elimination of danger from flood and contamination and the development of a proper street plan will be of immediate encouragement to the development of this valley, so the building of a railroad will at once furnish one of the prime requisites.

The topographical nature of the valley is such that little land immediately south of the present and proposed channel is suited for industrial use, due to an abrupt rise, making railroad approach difficult. North of the present and proposed channel, however, there is considerable bottom land and only in the extreme west does the ground rise abruptly.

For this reason, the railroad has been planned north of the new channel. A further reason for this location next to the channel is that excavations for the new channel can be used as fill for the railroad, thus effecting a very considerable economy in construction cost. Just south of the channel and parallel to it is the city boundary line, so that any extensive industrial development resulting from a railroad on the south side of the channel would necessarily be outside the city limits and of consequently little benefit to St. Louis.

Where connections are made with other railroads at either end of the line, and where several large streets cross the valley, expensive development is encountered along the railroad right-of-way, necessitating some little cost for condemnation of land and for bridging. The street plan and railroad have been so planned as to avoid any undue number of bridges. The cost of the line is not considered great, however. It can never again be built for the present figure. The cost, as compared with the resultant effect of a railroad in the valley in new industries, business and increased taxes and ratables, is a comparatively small item, irrespective of the value of the line as a link in the complete railroad belt line.

The total cost for the construction of the railroad, including right-of-way, grading, culverts, bridge construction, paving, track work and all related items is $526,615.*

*From report of John A. Knox, Assistant Engineer, Department of Public Utilities.

The cost here given is for a line which will connect at grade with the proposed Municipal Railroad on the levee and with the Iron Mountain Railroad, pass over Broadway, Alabama Avenue and intervening streets, descend to grade near Grand Avenue and pass under Morganford Road, Gravois Avenue, Watson Road, rise on grade near Wabash Avenue from where it would turn west, bridging the valley, and connect with the Frisco tracks and Terminal right-of-way. Should occasion demand a change in the grade of this road at any of the crossings, these items of cost would be altered. At all intersections with major streets, there is a separation of grades, so that there is at present no apparent reason for change of plan.

RESIDENTIAL AND INDUSTRIAL DISTRICTS.

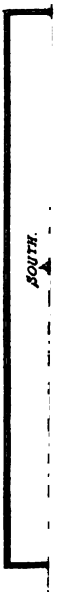
Material excavated for the new channel of the River des Peres will be used to build the railroad and to fill in the old channel. Two large areas will be made useful which at present are idle. One of these is bounded by Morganford Road, Weber Road, Alabama Avenue, Schirmer Street, Eugene Avenue and Blow Street. The second is bounded by the proposed railroad, Bancroft Avenue, McCausland Avenue, Nottingham Avenue, Donovan Street, Eichelberger Street, January Avenue and Brunswick Street. These two areas are shown on Plan No. 1 as industrial territory. Each includes some land not now subject to overflow and used for farm purposes. In general, however, the land is idle and would be of great value as industrial property, due to its proximity to the new industrial railroad and the opportunity to obtain switch connections into very nearly all property.

Approximately 950 acres of ground is included within these two tracts which would be no inconsiderable addition to the present limited available industrial property in St. Louis.

No detail street plan for these tracts is suggested since the major streets previously outlined will care for the majority of traffic and the location of minor streets is of no great moment. Obviously there will be demanded by the various plants locating here, tracts of varying size necessitating unusual block dimensions and consequently irregular minor street plan.

A larger area for industrial use would be highly desirable, but the strict limitations of proximity to railroad, existing development and characteristics of adjacent territory, make this impossible.

East of Alabama Avenue, for instance, the territory is at present entirely built up, while it would be inadvisable to have factories north of Blow street, since the land here would be inaccessible for railroads, and furthermore, there should be residential rather than industrial development adjacent to Carondelet Park.

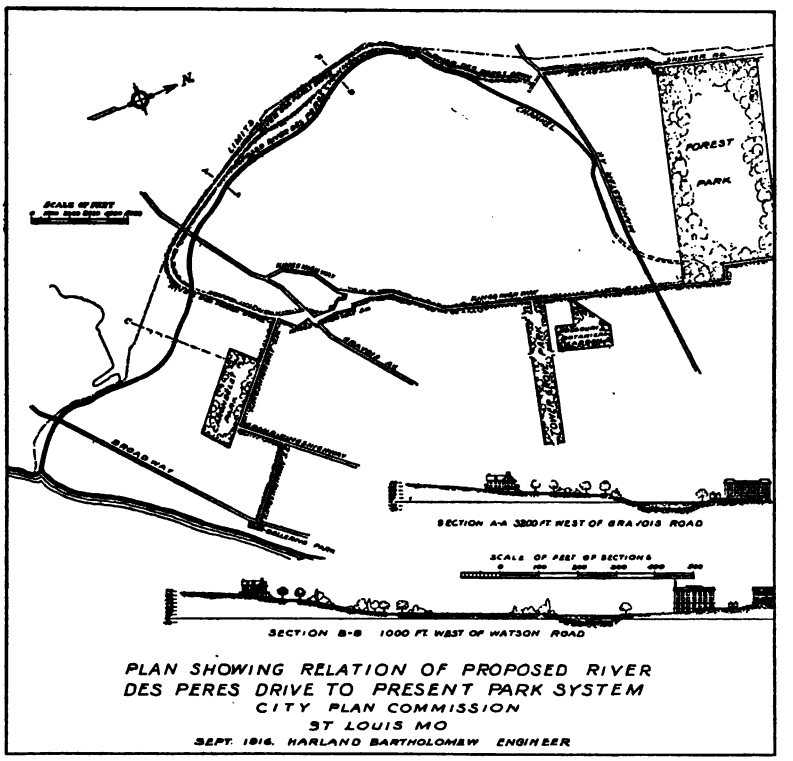


Between Morganford Road and Kammerer Avenue, in the River des Peres Valley, there is a strip of land which could be developed for industries but, like that north of Blow Street, it would be better suited to residence, particularly since the proposed driveway will follow the line of Kammerer Avenue. West of Kammerer Avenue, considerable land is used for cemeteries and for residences, which have centered about Gravois Avenue.

Just west of Gravois Avenue and north of the new railroad lies the second industrial district. This is limited on the north by probable residential development at Bancroft Avenue and Eichelberger Street, land north of these streets being far better suited for residential than for industrial development, much of it being so used at present.

Examination of the plan will indicate that several residential areas have been provided adjacent to the industrial districts. While a residential district next a factory district would not seem most desirable, at first consideration, it indeed is quite essential. Here can be built homes for the workers on ground best suited for residence, while the objectionable elements of time, travel and traveling expenses are eliminated. This is a much desired condition in many manufacturing cities. Several large industrial institutions have even gone so far as to build model homes adjacent to the factories which are rented to the employes, the purpose being to aid the employes in securing good living conditions with a minimum of expense and inconvenience.

The actual establishment by the city of a residential or industrial district from which other development would be excluded is something never before attempted in St. Louis. This has been done in other American cities, however, notably Los Angeles, New York and Minneapolis, and a similar establishment would be of tremendous benefit to St. Louis, especially in a development of the character under discussion.


FOREST
PARK
BROADWAY
SECTION A-A 3200 FT WEST OF GRAVOIS ROAD
SECTION B-B 1000 FT WEST OF WATSON ROAD
PLAN SHOWING RELATION OF PROPOSED RIVER
DES PERES DRIVE TO PRESENT PARK SYSTEM
CITY PLAN COMMISSION
ST LOUIS MO
SEPT. 1916. HARLAND BARTHOLOMEW ENGINEER

PLAN NO. 6.

DRIVEWAY.

From the Frisco Railroad in Lindenwood east as far as Morganford Road, there is a strip of property between the city line and the proposed channel which varies in width from 150 to 800 feet, being about 200 to 300 feet wide on the average. This land is mostly unused. With the proposed improvements of channel and railroad it would still be of little use for residence or industry, due to inaccessibility and its steep slope toward the river channel. Because of its natural attractiveness, its use for park purposes is suggested. The very limited width, however, would demand that a drive, rather than a number of disconnected parks, could best be built.

Careful study of the relation of this area to the park system of St. Louis indicates that it could profitably be made a part of the city's park system by incorporating it as a portion of a drive extending from Kingshighway southwest by a circuitous route to McCausland Avenue. From Forest Park at Clayton Road and Skinker Road to Forest Park at Kingshighway and Oakland Avenue there would then be a continuous drive of approximately 11 miles over McCausland, the new driveway and Kingshighway.

Such a circuit would be of unusual beauty in many places, would afford an excellent opportunity for demonstrating the advantages of a large part of the city about which comparatively little is known by the average St. Louisan, while its complete closure as a part of the park system would be a most pleasing feature, a result which other cities are spending enormous sums to obtain. With the development of pleasure vehicles has come a demand for drives and driveways connecting the parks almost as insistent as for the parks themselves. The opportunity here presented is, to say the least, unusual, and its equal cannot be had again within the city limits.

The route and design of the driveway are shown on the accompanying plan. In general it is proposed to have two 30-foot roadways separated by a planting strip 100 feet wide, there being 30-foot planting strips on either side of the roadways. Where the right-of-way is narrow a single roadway of 60 feet can be

built with a 30-foot planting strip on either side. Bridges will be necessary to connect with the viaduct over the Missouri Pacific tracks at McCausland Avenue, under the Frisco tracks at Lindenwood and over the channel and industrial railroad at Kammerer Avenue. These bridges would be 80 feet in width, with a roadway 56 feet wide and two sidewalks 12 feet wide. Some variation in the width of the center parking strip would occur where it would be necessary to place the roadways either on top or at the foot of an unusually steep slope.

The estimated cost of the driveway and adjacent park land, 280 acres in all, bridges, grading, paving and parking complete, is $1,277,668.

The cost of the driveway should be met wholly by bond issue since it would be of lasting benefit to the entire city and would be of little or no benefit to local property. North of the driveway would be the new channel and railroad and on the south would be the city line, benefit assessments on either side being impossible.

It is possible that some benefit assessments could fairly be levied against adjacent property from McCausland Avenue to the Frisco tracks, and from Hamburg Avenue to Kingshighway Southwest, but the unusual forms of construction in both places would greatly limit any extensive benefit assessments. All things considered, it would seem that this improvement could best be financed through a bond issue.

The greatest degree of usefulness would occur after the completion of Kingshighway Southwest, an undertaking which it is hoped will soon be completed, and the widening of McCausland Avenue from 60 to 80 feet. The latter could probably best be done by the establishment of a new building line and its cost paid for partly by assessment and partly by the city.

This driveway, with adjacent park area would add 280 acres to the city's park area, a small but desirable addition. The city's increase in park area has been at a standstill for several years. In adding to its park area St. Louis has not kept pace with other large cities.

CONCLUSION.

The total cost of the River des Peres Plan is $8,019,118 divided as follows:

Open Channel, closed sewer and all other related construction	$5,815,450
Double track industrial railroad complete	526,000
Driveway from Kingshighway Southwest to McCausland Avenue and Manchester	1,277,668
Ivanhoe Avenue—McCausland Viaduct (city's share)	400,000
Total	$8,019,118

It is proposed that the entire sum should be raised by a bond issue, the term of which must be 20 years, according to the present limitations of the State Constitution. Each cost item is for an improvement of city wide benefit, as previously explained.

The construction of the sewer and channel for the disposition of sewage and relief from floods is an imperative undertaking. The danger to health and property is constantly increasing. So great is the demand for relief that right-of-way for the channel will gladly be given by many owners, some of whom now have damage suits pending against the city. Many owners have already signified a willingness to donate land for channel, railroad and driveway, thus probably reducing by a considerable sum the cost of land condemnation as estimated above.

Approximately 72% of the entire cost of the proposed plan is for the sewer and channel which the city must soon construct. When it is considered that for an additional 28% ($2,203,668) untold benefit can be derived in the opening up of idle territory to industries and residence, with highly desirable railroad facilities, a complete circuit driveway and a good street plan, the necessity for simultaneous action on all projects seems obvious.

St. Louis, among other progressive American cities, has interested itself in modern city planning. In the River des Peres Plan is presented a city planning possibility which many cities would welcome and undertake at far greater expense than the

present plan involves. It is because of the opportunity for constructive city planning that the City Plan Commission has caused the publication of this report. The Commission indorses the plan most heartily, believing as it does, that it is for the very best interests of the City of St. Louis.

In April, 1917, a referendum on a municipal bond issue will probably be held. Provision for the River des Peres Plan should be made in that issue, for, to repeat a previous statement, no greater or far-reaching undertaking for the commercial and industrial advancement of St. Louis can be conceived.